

**REMARKS**

Reconsideration of the subject application in view of the following remarks is respectfully requested. Claims 1-34 remain pending in this application. By this amendment, Claims 1 and 6 have been amended. No new matter has been added to the subject application by this amendment, nor have any new issues been raised. Applicants reserve the right to pursue patent protection for any subject matter covered by the claims as presented prior to this amendment in this application or another application claiming priority from the present application.

**Status of Application and Claims**

Per the outstanding Office Action dated January 25, 2005, Claims 6-7 and 14 stand rejected under 35 U.S.C. §112, second paragraph. Claims 1-21 and 28-31 stand rejected under 35 U.S.C. §102(b) as being allegedly unpatentable over U.S. Patent No. 5,350,643 to Imahashi et al (hereinafter referred to as "Imahashi"). Claims 22-27 stand rejected as being allegedly unpatentable over Imahashi, U.S. Patent No. 6,248,460 to Surampudi et al (hereinafter referred to as "Surampudi") and U.S. Patent No. 6,059,943 to Murphy et al (hereinafter referred to as "Murphy"). Claims 32-34 stand rejected as being allegedly unpatentable over Imahashi in view of U.S. Patent No. 5,795,668 to Banerjee (hereinafter referred to as "Banerjee").

**Response by Applicant**

Applicants traverse the Examiner's rejections primarily because of the reasons set forth herein below. Applicants believe the claims as examined are directed to subject matter which is neither taught nor suggested by the cited references. By this amendment, Applicants have amended Claims 1 and 6 in an effort to advance prosecution, but not in

acquiescence of any rejection thereto. Applicants respectfully submit that the claims as now presented are also directed to subject matter which is neither taught nor suggested by the cited references. Furthermore, Applicants believe these claims are now in condition for allowance. For illustrative purposes, Applicants have addressed the rejections in the outstanding office action as if the rejections had been asserted against the claims as presented herein. Applicants reserve the right to argue any issues raised in the outstanding office action that are not addressed herein.

**Claim Rejections — 35 U.S.C. § 112**

Applicants have amended Claim 6 to obviate the 112 rejections of Claims 6-7, and in particular, to claim the subject matter contained in the specification in such a way as to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Thus, withdrawal of this rejection is respectfully requested.

Claim 14 was amended in a Preliminary Amendment filed October 14, 2003 in a manner which Applicants believe to obviate the 112 rejection cited by the Examiner in the outstanding Office Action. Thus, withdrawal of this rejection is respectfully requested.

**Claim Rejection – 35 U.S.C. § 102**

Applicants contend that this rejection should be withdrawn primarily because the instant application as presently claimed is not anticipated by the cited reference as required to support a 102 rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed.Cir. 1987). The

identical invention must be shown in as complete detail as is contained in the... claim.

*Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim.

Imahashi discloses a solid polymer electrolyte type fuel cell having a solid polymer electrolyte membrane 1 and gas diffusion electrodes 2 and 3 provided on both sides of the membrane. Gas diffusion electrodes 2 and 3 include catalyst layers 6 and 8 and gas diffusion layers 7 and 9 on the outer side of the respective catalyst layers. The electrodes 2 and 3 are constructed so that the water-repellency of the (hydrogen) electrode 2 is higher than that of the (oxygen) electrode 3, and furthermore, a gradient of water-repellency is provided in the catalyst layer of each electrode so that the water-repellency in the portion [of the catalyst layer] facing to the electrode membrane is higher than that in the portion facing to the gas diffusion layer in each catalyst layer. (See e.g., Imahashi Abstract, Fig. 2)

In contrast, Applicants now claim, in amended Claim1, a membrane electrode assembly that comprises a "composite membrane having a first major surface area and a second major surface area" comprising a "membrane layer comprising an ionically conductive solid dispersed therein and an ionomeric binder" and "at least one protective layer disposed adjacent to the membrane layer comprising an ionically conductive solid, an ionomeric binder, and a hygroscopic fine powder", along with "an anode comprising an oxidizing catalyst adjacent said first major surface area of said composite membrane" and "a cathode comprising a reducing catalyst adjacent said second major surface area of said composite membrane."

Clearly, Imahashi does not disclose "each and every element" as set forth in Applicants' amended claim 1, in as complete detail as is contained in amended claim 1 or arranged as recited in amended claim 1. For example, Imahashi discloses a solid polymer electrolyte fuel cell having a membrane assembly with water-repellent electrodes, and in particular, electrodes that form a water flow gradient by having a higher water-repellency in the catalyst layers of the electrodes, on either the side facing the electrolyte membrane or the side facing the gas diffusion layers. (See e.g. Imahashi Abstract vs. Col. 6, lines. 6-21). Applicants' claim a membrane layer comprising an ionically conductive solid dispersed therein and an ionomeric binder and at least one protective layer disposed adjacent to the membrane layer comprising an ionically conductive solid, an ionomeric binder, and a hygroscopic fine powder, along with, among other things, anode and cathode catalyst portions.

Irrespective of whether hygroscopic and hydrophilic have the same meaning, as mentioned by the Examiner in Paragraph 9 of the outstanding Action, clearly, Imahashi's disclosure of increasing water-repellency in the catalyst layer adjacent the membrane layer does not anticipate Applicant's claims as amended which include hygroscopic fine powder (having attributes that absorb moisture) in a protective layer adjacent the membrane layer and separate catalyst layers.

Since a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference, and Imahashi clearly does not include each and every element as set forth in Applicants' amended Claim 1, the 102 rejection is unsupported and must be withdrawn as to this claim. Since Claims 2-34, either depend from amended Claim 1 directly or depend from

claims that depend from amended Claim 1, and thus provide further limitations thereto, these claims are also inherently not anticipated by Imahashi. Thus, the 102 rejection as to these claims, namely, Claims 2-34 is unfounded and must be withdrawn.

**Claim Rejections – 35 U.S.C. § 103**

With regard to the 103 rejection, Applicants believe that the burden necessary for establishing a *prima facie* case of obviousness has not been established.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Examiner alleges that the instant invention as recited in Claims 22-27 is rendered obvious by a hypothetical combination of Imahashi, Surampudi and Murphy. The Examiner also alleges that the instant invention as recited in Claims 32-34 is rendered obvious by a hypothetical combination of Imahashi and Banerjee. As discussed above, Imahashi neither teaches nor suggests all of the claim limitations in newly amended Claim 1. Since Claims 22-27 are either directly dependent on amended Claim 1 or depend from claims that depend from amended Claim 1, and thus add further limitations thereto, the hypothetical combination of Imahashi, Surampudi and Murphy proposed by the Examiner must not teach or suggest all of the claim limitations of Claims 22-27, as required to establish a *prima facie* case of obviousness under 35 U.S.C. § 103.

In other words, the teachings of Surampudi and Murphy do not cure the deficiencies of Imahashi, in that a combination of thereof does not disclose the elements recited by Applicant in amended Claim 1 or Claims 22-27. Accordingly, the 103 rejection of Claims 22-27 is improper and must be withdrawn.

Similarly, Banerjee does not cure the deficiencies of Imahashi. Since Claims 32-34 are either directly dependent on amended Claim 1 or depend from claims that depend from amended Claim 1, and thus add further limitations thereto, the hypothetical combination of Imahashi and Banerjee proposed by the Examiner must not teach or suggest all of the claim limitations of Claims 32-34, as required to establish a *prima facie* case of obviousness under 35 U.S.C. § 103. Accordingly, the 103 rejection of Claims 32-34 is improper and must be withdrawn.

### **Conclusion**

Amended Claim 1 contains elements and limitations that are not taught or suggested by Imahashi. Thus, amended Claim 1 is not anticipated by Imahashi. Since amended independent Claim 1 is not anticipated by Imahashi, and the claims that depend from amended Claim 1, namely Claims 2-34 provide further limitations thereto, these claims are also not anticipated Imahashi.

A *prima facie* case has not been established. Thus, the 103 rejections of Claims 22-27 and Claims 32-34 are improper and must be withdrawn. Claims 22-27, which depend from amended Claim 1, contain limitations which are neither taught nor suggested by Imahashi, Surampudi and Murphy, either alone or combined. Claims 32-34, which depend from amended Claim 1, contain limitations which are neither taught


nor suggested by Imahashi and Banerjee, either alone or combined. Accordingly, withdrawal of the 103 rejections are therefore respectfully requested.

Applicants believe that the formal deficiencies have been addressed by this amendment and that the 112 rejections should therefore be withdrawn.

It is respectfully submitted that as a result of this amendment and discussion relating thereto, all of the claims presently pending in this application are in condition for allowance, and such action is earnestly solicited.

If the Examiner believes that a personal or telephonic interview may facilitate resolution of any remaining matters, Applicant's representative may be contacted at the number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. Newman', is written over a horizontal line.

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Date: June 27, 2005